

# Sexually Transmitted Diseases: Meeting the 1990 Objectives— a Challenge for the 1980s

PAUL J. WIESNER, MD  
WILLIAM C. PARRA, MS



THE FIRST SURGEON GENERAL'S REPORT ON Health Promotion and Disease Prevention, *Healthy People*, chronicled a century of dramatic gains in the health of the American people, previewed current preventable threats to health, and identified 15 health priority areas in which further actions are required to improve the health of our people. Importantly, the report established broad national goals, expressed as reductions in overall death rates or days of disability, for the improvement of the health of Americans at the five major life stages. To achieve these broad goals, specific and measurable national prevention objectives were systematically established for each of the 15 priority areas and delineated in the document "Promoting Health/Preventing Disease: Objectives for the Nation."

Sexually transmitted diseases (STDs) is 1 of the 15 health priority areas addressed in the report. These diseases represent a major health problem in this country, cause patients enormous suffering, and cost the nation billions of dollars annually. Important areas of concern include continuing epidemics of gonococcal and chlamydial infections, the rising incidence of infectious syphilis, and the increasing numbers of genital herpes infections. Moreover, we have an improved understanding of the long-term effect that these infections have on reproductive health and pregnancy outcome. Thus, the STD field has grown in scope and complexity during the past decade (table 1). Demographic, sociological, and behavioral changes in our society are certainly important contributors to today's problem:

1. The baby boom of the 1950s and 1960s has led to the young adult boom of the 1970s and 1980s. By

the mid-1980s, the population between the ages of 18 and 29 will peak at approximately 49 million (1).

2. An increasing proportion of women in the 15–19 age group is engaging in sexual intercourse before marriage (2,3).

3. The proportion of sexually experienced, never-married women who had more than 1 sex partner increased from 38.5 percent in 1971 to 49.9 percent in 1976 (4).

4. The divorce rate has steadily increased from 2.6 per 1,000 total population in 1967 to 5.3 per 1,000 in 1980 (5).

5. More adults are remaining single or postponing marriage. The rate of widowed and divorced women remaining single increased from 52.9 percent in 1965 to 67.7 percent in 1977 (6).

These social changes indicate that increasing numbers of teenagers and single adults are initiating sexual activity at an earlier age, are having multiple sex partners, and are remaining single for a longer time. These changes in sexual behavior patterns are placing more people at a higher risk of STDs than ever before, thus further aggravating the STD control problem and posing a major challenge to public and private medicine.

## Expanding Spectrum of Disease

Today, 10 million cases of STD occur in our young adult population. Conservative estimates of the total costs of STD to our society exceed \$2 billion annually, with the cost of gonorrhea alone exceeding \$1.1 billion (7). In particular, women and newborns bear an inordinate share of the physical and emotional complications. The effects on the neonate are among the more devastating aspects of the problem:

---

*Dr. Wiesner is Director of the Venereal Disease Control Division and Mr. Parra is Chief of the Training, Education, and Consultation Section in that Division, Centers for Disease Control, Atlanta, Ga. 30333. Tearsheet requests to Dr. Wiesner.*

1. One out of every 20 offspring born in this country will have a chlamydial infection; of the infected group, 1 out of every 2 will develop conjunctivitis, and 1 out of every 5 will develop pneumonia (8).

2. Early syphilis is increasing among women of child-bearing age. If early syphilis is untreated during pregnancy, 40 percent of the infants will be stillborn, born prematurely, or suffer neonatal death. Another 40 percent will have congenital syphilis. Thus, a woman who has early, untreated syphilis during her pregnancy has only a 1 in 5 chance of delivering a normal infant (9).

3. As many as 3 out of every 10,000 newborns may be infected by type II herpes simplex virus. Half of these may eventually die in the neonatal period, while 25 percent of those surviving will suffer serious neurological defects (8).

4. Congenital infections caused by cytomegalovirus (CMV) are estimated to occur in 1.5 percent of all pregnancies, affecting 45,000 newborns annually. Fifteen percent of these infants will be retarded, deaf,

or suffer visual defects. Sexual transmission is suspected in a significant portion of primary cytomegalovirus infections, although the exact percentage is not known (8).

5. Group B streptococcus infections are estimated to cause symptomatic disease annually in 12,000 infants under 3 months of age. Nearly 5,000 infant deaths a year are attributable to this infection. An unknown portion of these cases are probably transmitted sexually during pregnancy (10).

6. Pelvic inflammatory disease (PID) is the most common serious complication of gonococcal and chlamydial infections. An estimated 1 million episodes occur annually, leading to 25,000 ectopic pregnancies, 213,000 hospitalizations, 115,000 major pelvic surgeries often resulting in permanent sterility, and 900 deaths (11).

### Gonorrhea Control

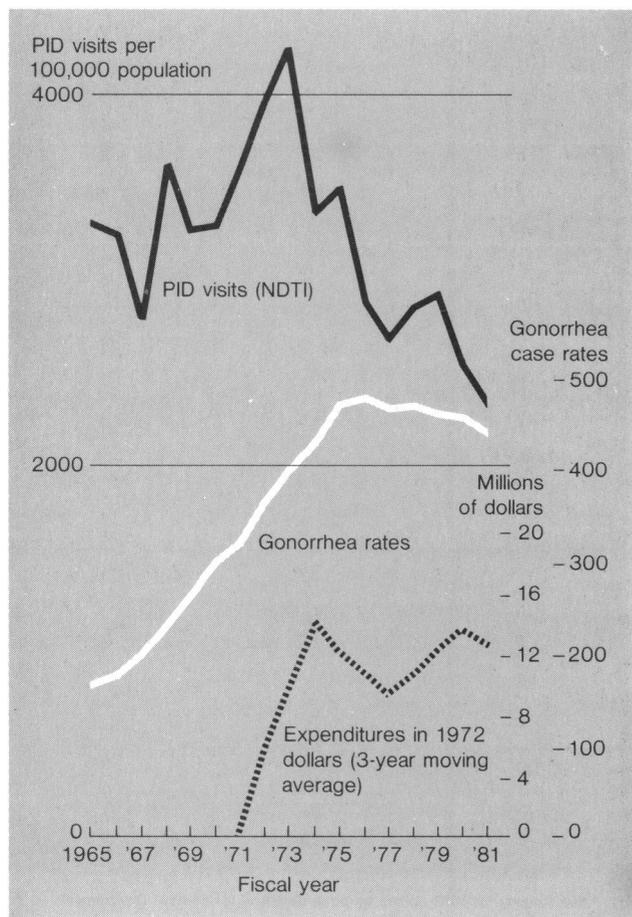
A major accomplishment of the cooperative effort between public and private health programs is the re-

Table 1. Major syndromes of sexually transmitted diseases

Syndrome and complication	Sexually transmitted etiological agent
Salpingitis	<i>Neisseria gonorrhoeae</i> , <i>Chlamydia trachomatis</i> , <i>Mycoplasma hominis</i>
Infertility:	
Tubal damage following acute salpingitis	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i> , <i>M. hominis</i>
Postepididymitis	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i>
Ectopic pregnancy, postsalpingitis	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i> , <i>M. hominis</i>
Pregnancy morbidity, including spontaneous abortion, stillbirth, premature labor/low birth weight, premature rupture of membranes, chorioamnionitis, and postpartum endometritis	Herpes simplex virus, <i>Treponema pallidum</i> , <i>C. trachomatis</i> , <i>N. gonorrhoeae</i> , <i>Ureaplasma urealyticum</i>
Congenital and perinatal infections:	
"TORCHES" syndrome <sup>1</sup>	Cytomegalovirus, herpes simplex virus, <i>T. pallidum</i>
Other infant and childhood morbidity, including—	
Sepsis	<i>N. gonorrhoeae</i> Group B <i>Streptococcus</i> ?
Eye infection	<i>C. trachomatis</i> , <i>N. gonorrhoeae</i>
Pneumonia	<i>C. trachomatis</i> , <i>T. pallidum</i>
Otitis media	<i>C. trachomatis</i>
Cognitive impairment	Cytomegalovirus, herpes simplex virus, <i>T. pallidum</i> , Group B <i>Streptococcus</i> ?
Male urethritis	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i> , <i>U. urealyticum</i>
Epididymitis	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i>
Lower genital tract infection in women:	
Vulvitis	<i>Candida albicans</i> , herpes simplex virus
Vaginitis	<i>Trichomonas vaginalis</i> , <i>C. albicans</i> , <i>Gardnerella vaginalis</i>
Cervicitis	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i> , herpes simplex virus
Female urethritis	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i>
Genital ulceration	Herpes simplex virus, <i>T. pallidum</i> , <i>Haemophilus ducreyi</i> , <i>Campylobacterium granulomatis</i> , <i>C. trachomatis</i> (lymphogranuloma venereum)
Proctitis	<i>N. gonorrhoeae</i> , herpes simplex virus, <i>C. trachomatis</i> , <i>Campylobacter fetus</i> , <i>Shigella</i> spp., <i>Entamoeba histolytica</i>
Acute arthritis with genital infection	<i>N. gonorrhoeae</i> , <i>C. trachomatis</i>
Hepatitis	Hepatitis B virus, hepatitis A virus, cytomegalovirus, <i>T. pallidum</i>

<sup>1</sup> "TORCHES" syndrome refers to congenital infections caused by toxoplasmosis, rubella, cytomegalovirus, herpes simplex virus, and syphilis.

Figure 1. Gonorrhea case rates and visits versus Federal project grants to States, in 1972 dollars,<sup>1</sup> United States, fiscal years 1965–1981



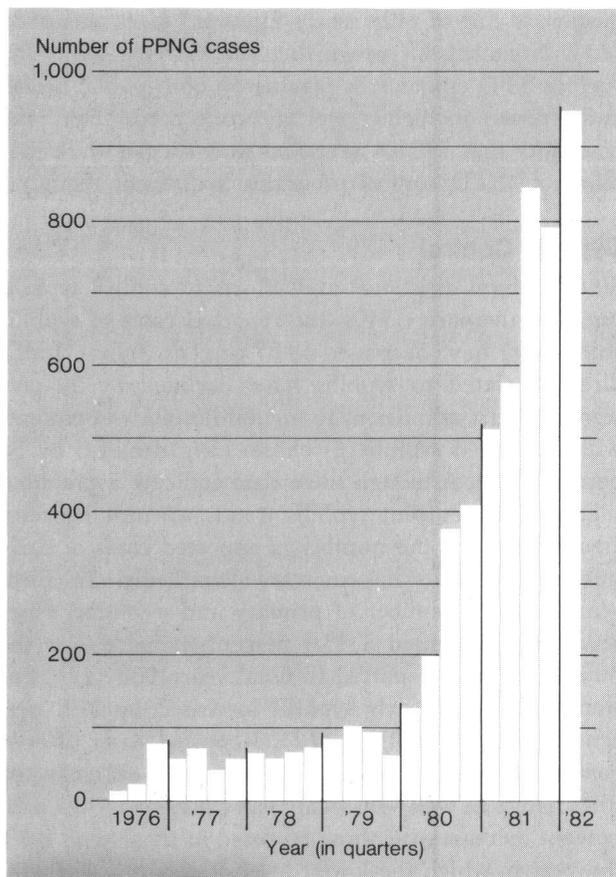
<sup>1</sup> Adjustment for 1972 dollars by price deflators for Federal Government purchases of goods and services.

NOTE: NDTI is National Disease Therapeutic Index, IMS America Ltd.

versal in the gonorrhea morbidity rate, which had increased annually at approximately 12 percent between 1965 and 1975 (12). With the implementation, in 1972, of a national program to control gonorrhea, peak Federal expenditures in 1974 were followed by decreased gonorrhea morbidity in 1975 (fig. 1). The number of visits by PID patients to private physicians' offices between 1973 and 1981 also decreased by a dramatic 45 percent (unpublished data from IMS America Ltd., National Disease Therapeutic Index). More importantly, actual decreases occurred despite the social changes just described that place increasing numbers of people at risk for STDs.

The outlook for control of penicillinase-producing *Neisseria gonorrhoeae* (PPNG) infections, however, is not as encouraging. PPNG was first isolated in the United States in early 1976 (13). The State and local health departments, assisted by the Centers for Disease Control (CDC), began prospective surveillance for

Figure 2. Number of cases of penicillinase-producing *Neisseria gonorrhoeae* (PPNG), by quarter, United States (including outlying areas), April 1976–March 1982



PPNG strains by the latter part of the year. Over the next several years, the reported incidence remained relatively stable. The majority of cases were linked to infections acquired overseas and, through active epidemiologic intervention, sustained civilian-to-civilian transmission appeared to be rare. Although PPNG infections still account for only a small proportion of the gonococcal infections reported in this country, reported PPNG cases have increased dramatically—from 328 in 1979 to 1,118 cases in 1980, a 241 percent increase! In 1981, 2,747 cases were reported, an increase of 146 percent over the number reported in 1980 (fig. 2).

The reasons for the increase in PPNG infections over the past 2 years are not entirely clear. To a large extent, the additional number of infections is a consequence of continuing importation of PPNG strains into this country (13,14). However, part of the increase may reflect changes in laboratory surveillance procedures. No indications exist as yet that PPNG infections have spread to any level beyond the capabilities of STD control programs in this country. In fact, recent experiences in Los Angeles, where an intensive

control effort was undertaken, support the contention that even large metropolitan areas can transform the PPNG problem from one of sustained domestic transmission to one of only newly imported cases occurring (15). Nonetheless, recognizing the extreme stress the current STD epidemic is placing on both public health and private medicine, we are concerned about the possibility that PPNG infections may surpass the capabilities of STD control programs to prevent them.

### Syphilis Control

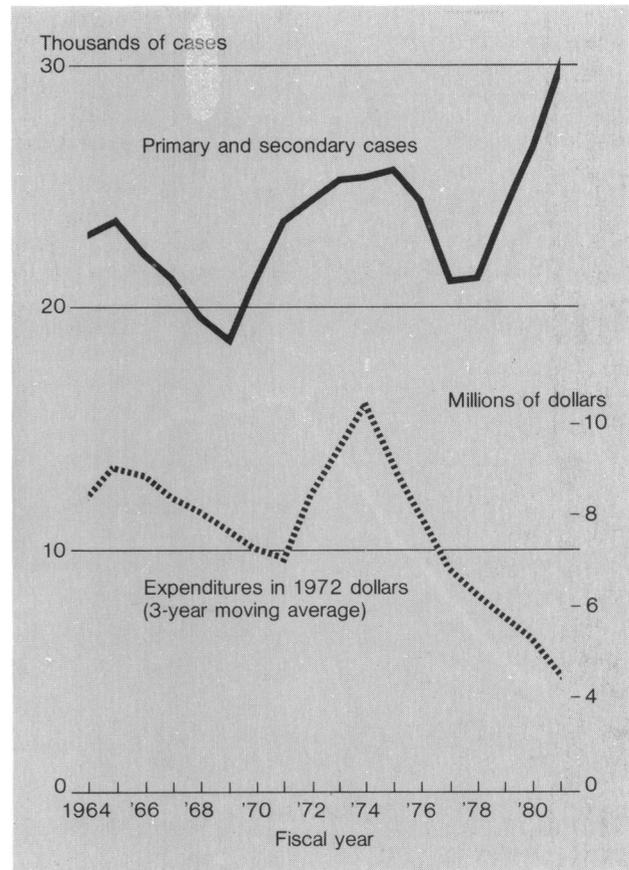
Since Federal assistance and efforts to control syphilis began in the early 1940s, the reported cases of syphilis (all stages) have decreased by 87 percent. Infant deaths directly related to syphilis have declined by 99 percent, and first admissions to mental hospitals of patients with diagnosed syphilis psychoses have declined by 98 percent (16). Although these data indicate a potential success story, current syphilis trends warrant concern. In recent years, the number of reported cases of early infectious syphilis has increased markedly. In fiscal year 1981, the number of primary and secondary cases reported represented a 43.4 percent increase over the number of cases reported in fiscal year 1980 (12). For women, cases of early syphilis increased by 21.6 percent from 1980 to 1981 (12). Reported cases of congenital syphilis in infants under 1 year old reflected this change as well—in fiscal year 1981, there was a 20 percent increase over those reported in fiscal year 1979, the year in which the lowest level of congenital syphilis cases was reported in the history of this country (12). The increase during calendar years was even more dramatic—in 1981, a 54 percent increase occurred in cases of congenital syphilis in infants under 1 year old, compared to those reported in calendar year 1978 (12).

We are clearly falling behind in syphilis control. Syphilis trends appear to be affected by the level of Federal grant support directed against this infection. Increased funding has been followed by a decline in reported cases; upward trends in syphilis morbidity have followed periods of decreasing Federal grant support (fig. 3). The recent increase in reported morbidity is believed to reflect an actual increase in the incidence of the disease. Programmatically, we ascribe this increase primarily to a shift of limited resources from syphilis to gonorrhea control.

### Cost Benefit of Prevention

Despite concerns about syphilis trends, dollars spent on preventing STDs pay large dividends. In fiscal year 1981, federally supported syphilis and gonorrhea control efforts—based on prevention of an estimated 209,400 new cases—saved approximately \$150 million (unpub-

Figure 3. Inflation and Federal project grants to States for syphilis control, primary and secondary cases of syphilis versus Federal project grants to States, in 1972 dollars,<sup>1</sup> fiscal years 1964–81



<sup>1</sup> Adjustments for 1972 dollars by price deflators for Federal Government purchases of goods and services.

lished projections, Centers for Disease Control), as follows:

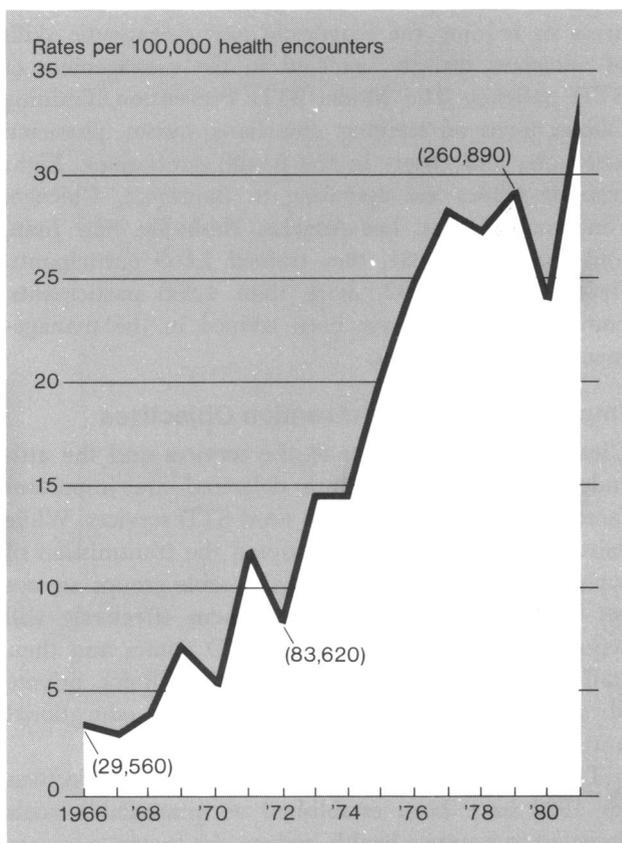
- \$119.3 million from prevented complications of gonorrhea and syphilis (gonococcal PID, fetal deaths, and congenital and late syphilis),
- \$24.3 million from prevented uncomplicated cases of gonorrhea, and
- \$5.8 million from treatment costs by preventing the broad establishment of PPNG (currently only 0.4 percent of all gonorrhea costs).

Of the total savings from control program activities, 85 percent or \$135 million were attributed to prevention efforts supported by Federal funds. For every Federal dollar spent in fiscal year 1981 (\$47.2 million in grant support and direct operation), \$3 were saved in diseases prevented.

### The Challenge of Other STDs

Infections caused by *Chlamydia trachomatis* are now among the most prevalent STDs in our country. An

Figure 4. Estimated rates of patient encounters with private physicians for genital herpes infection, United States, 1966-79



NOTE: Figures in parentheses are exact amounts.  
 DATA SOURCE: National Disease Therapeutic Index, IMS America Ltd.

estimated 2.5 million cases of nongonococcal urethritis and related chlamydial infections occur in the United States each year (7). In a large inner-city hospital in Atlanta, *C. trachomatis* was detected in 15 percent of pregnant women (17). The clinical spectrum for the disease is almost identical to that of gonorrhea. Both infections cause urethritis and epididymitis in men and cervicitis and salpingitis in women. They also pose a sizable risk of transmission to newborns and contribute to poor pregnancy outcome.

Genital herpetic infections appear to be on the rise as well. The estimated rates of patient encounters with

private physicians for genital herpes infections rose dramatically between 1966 and 1981 (fig. 4). Neonatal mortality, based on data recorded on death certificates, has increased from 2.3 per million live births in 1968 to 9.0 per million live births in 1978 (National Center for Health Statistics, unpublished mortality data). What proportion of these increases is due to a greater professional awareness of herpes infection is unknown.

Although chlamydia and genital herpes are common and cause serious problems, control efforts are as yet unproved. Diagnosis of chlamydia is expensive and therefore not widely available for use in any generalized screening effort to identify asymptomatic women. Diagnostic capabilities are somewhat more available for herpetic lesions, although treatment is virtually nonexistent (except for some amelioration of initial infections). More important, preventive approaches beyond patient education are questionable (table 2).

**Role of the Federal Government**

Several agencies in the Public Health Service are engaged in the Federal effort against the STDs. CDC, as the lead agency, is involved with public education, professional training, surveillance, evaluation, and operational research. CDC assists in the national control of STDs through components of the Health Services Administration (HSA) at national, State, and local levels to (a) prepare service guidelines and standards, (b) provide STD training to medical and paramedical staffs, and (c) assure consistency in service including patient education, diagnosis, treatment, and epidemiologic followup for STDs in all HSA health care facilities. CDC coordinates its venereal disease research activities with various components of the National Institutes of Health and collaborates with the Food and Drug Administration in moving promising STD therapies through approval stages and in developing package inserts for licensed diagnostic and treatment products.

CDC currently provides Federal grant support to 63 project areas. These funds assist State and local areas in implementing control programs such as (a) patient interviewing and counseling for the timely referral of

Table 2. Prevention priority<sup>1</sup> for sexually transmitted diseases

Disease	Numbers of cases	Consequences per case	Specific diagnosis	Treatment	Prevention methods
Gonorrhea	High	Moderate	Inexpensive, available	Excellent	Proved
Syphilis	Moderate	Moderate	Inexpensive, available	Excellent	Proved
Chlamydia	High	Moderate	<sup>2</sup> Expensive, limited	Very good	Theoretical
Herpes	High	Moderate	<sup>2</sup> Expensive, limited	Very limited	Questionable

<sup>1</sup> With existing technology.

<sup>2</sup> Clinical diagnosis is useful, however.

sexual partners, (b) intensive screening of women at high risk of gonococcal infections, (c) following reactive serologic tests to identify patients in need of diagnosis and treatment for syphilis, (d) patient education programs, including high-risk persons and general public education-school education programs, (e) intensive hospital surveillance systems for the identification and care of women with gonococcal PID, and (f) clinical training programs to refine diagnostic and treatment skills.

Consumer and professional education in STD control have been more heavily emphasized in recent years. In consumer education, CDC is preparing prototype school curriculum materials to facilitate the introduction of STD education into curriculums throughout the country. The self-instructional materials, for students in grades 6 through 12, are accomplished by a teacher's guide with supplementary learning activities. Field testing of the materials will be completed in 1982. In 1983, a commercial publisher will publish, market, and distribute them nationally.

A second national consumer education project, the VD National Hotline, was implemented to provide both general and referral information to people at high risk of STDs. The toll-free Hotline, operated by the American Social Health Association (ASHA) in Palo Alto, Calif., is partially supported by a Federal grant. It has four incoming WATS lines, three national and one State (California). Direct answers are given to questions about STDs from 8 am to 8 pm weekdays (Pacific standard time) and 10 am to 6 pm on weekends. More than 107,000 calls were received in 1981—56 percent from people 24 years old or younger (ASHA, unpublished data). Inquiries were received from all 48 contiguous States and the District of Columbia; the percentage distribution closely paralleled the national population distribution.

Professional education needs no less attention. A critical need exists to educate and update the physician community concerning the management of patients with STDs. The appearance of penicillin in the 1940s and other antibiotics in the 1950s led to the demise of the specialties of venereology and syphilology and a significant decrease in venereology training for medical students. By 1974, the teaching of venereology in our nation's medical schools decreased to 8.2 hours in a typical 4-year curriculum (18,19). In a survey of medical schools conducted in 1981, the number of teaching hours related to STDs had dropped to 6 hours (20). The same survey results indicated that only 22 percent of the medical residency programs offered any training in venereology.

In cooperation with local health departments and

medical schools, CDC began a national training program for clinicians in 1979 to assist States and local areas in refining the diagnostic and therapeutic skills of clinicians directly involved in the management of STD patients. The Model STD Prevention/Training Clinics focus on training physicians, nurses, physician assistants, and others in the health professions. Eight training clinics are operating in Baltimore, Chicago, Cincinnati, Dallas, Los Angeles, Nashville, San Juan, and Seattle. In 1981, they trained 1,669 participants. By the end of 1982, more than 4,500 participants, cumulatively, will have been trained in the management of STD patients.

### Implementing 1990 Prevention Objectives

Clearly, both the quality of the services and the attitudes with which they are delivered are important factors in reaching those who need STD services. While existing programs have interrupted the transmission of syphilis and gonorrhea, many vulnerable groups are not yet being served. To approach them effectively will require not only the efforts of STD clinics and their staff, but also those of family planning clinics, private physicians, public health laboratories, and educational institutions.

To provide a measure of progress, national objectives for 1990 have been established as quantifiable goals designed to improve health, reduce risk factors, increase awareness, and improve protection and surveillance (table 3). Of the 11 goals related to STDs and listed in "Objectives for the Nation" (21), the 5 most important priorities for the Federal effort by 1990 are as follows:

1. Reported gonorrhea incidence should be reduced to a rate of 280 cases per 100,000 population. In 1981, the reported case rate was 445.8 per 100,000 population (12).

2. Reported incidence of gonococcal pelvic inflammatory disease should be reduced to a rate of 60 cases per 100,000 females. In 1978, the estimated rate was 130 cases per 100,000 females (12).

3. Reported incidence of primary and secondary syphilis should be reduced to a rate of 7 cases per 100,000 population per year, with a reduction in congenital syphilis to 1.5 cases per 100,000 children under age 1. In 1981, the reported incidence of primary and secondary syphilis was 13.3 cases per 100,000 population; the reported incidence of congenital syphilis was 5.1 cases per 100,000 children under age 1 (12).

4. Every junior and senior high school student in the United States should receive accurate, timely education about STDs. Currently, about 70 percent of school systems provide some information about STDs,

Table 3. Progress toward quantitative objectives for prevention of sexually transmitted disease, rates per 100,000 population.

Objectives	1978	1979	1980	1981	1982	1990	Percent change	
							From 1979	Average annual plan <sup>1</sup>
<b>Gonorrhea:</b>								
Plan .....		459				280	(-39.0)	(-3.3)
Actual .....	468.8	465.1	460.8	445.8				
Percent change .....				(-4.1)				
<b>GPID:<sup>2</sup></b>								
Plan .....	130					60	(-53.8)	(-4.1)
Actual .....								
Percent change .....								
<b>PID outpatient data, NDTI:<sup>3</sup></b>								
Actual .....		2,969.0						
Percent change .....		(-31.0 from 1973)						
<b>PID outpatient data, NAMCS:<sup>4</sup></b>								
Actual .....		1,983.0						
Percent change .....		(-59.9 from 1973)						
<b>Primary and secondary syphilis:</b>								
Plan .....		11				7	(-36.4)	(-3.0)
Actual .....	9.8	11.1	12.3	13.3				
Percent change .....				(+19.8)				
<b>Congenital syphilis:<sup>5</sup></b>								
Plan .....		3.7				1.5	(-59.5)	(-5.0)
Actual .....	3.5	3.3	3.2	5.1				
Percent change .....				(+53.8)				

<sup>1</sup> Plan refers to the projected or estimated levels used to establish the broad objectives for 1990.

<sup>2</sup> Gonococcal pelvic inflammatory disease.

<sup>3</sup> Encounters with fee-for-service, office-based physicians (office, hospital, telephone, house call, other); National Disease Therapeutic Index, IMS

America Ltd.

<sup>4</sup> Visits to fee-for-service, office-based physicians; National Ambulatory Medical Care Survey.

<sup>5</sup> Rate per 100,000 live births.

NOTE: PID outpatient data are alternative data.

but the quality and timing of the instruction varies greatly.

5. At least 95 percent of health care providers seeing suspected cases should be capable of diagnosing and treating all currently recognized STDs.

The financial resources available to Federal, State, and local public health agencies limit their activities to control efforts that focus primarily on the prevention and control of syphilis and gonorrhea. Therefore, the priority objectives are those which focus on these diseases. We expect that a reduction in serious neonatal infections due to herpes and chlamydia and a reduction in the incidence of nongonococcal infections will also be affected by those STD services delivered by family planning clinics, private physicians, and other medical programs. Progress toward achieving these objectives will be enhanced by the results of research on causes and prevention of these diseases and by improved diagnostic capabilities.

Achievement of the objectives will require activities that supplement those of the Federal Government. State health department representatives could work with their counterparts in the departments of education to ensure that junior high and high school teachers have access to STD teaching resources useful for class-

room instruction. Activities aimed at high-risk populations are also necessary; for example, institutions of higher learning could use student health service programs to provide STD education, treatment, and control services. Similarly, voluntary organizations can support STD information activities such as local VD hotlines.

The range of possible activities contributing toward achievement of the STD objectives has been described in two reports (7,21). The Department of Health and Human Services will support those activities consistent with the Federal role of leading, catalyzing, and providing strategic support. State, local, and private organizations will supplement this effort through activities compatible with their organizational mandate and available resources.

The magnitude of the STD problem is expanding. We have an urgent need for both the public and private medical sectors to recognize the implications of the STD problem confronting us in the 1980s. The growing complexity of STD requires all those providing clinical care for STD patients to employ the most current diagnostic and treatment methods. Also, the scope of and support for STD research needs to be widened. Without the professional community's support, and involvement of the private sector, the inci-

dence of STD will continue to increase at alarming proportions during this decade. The opportunity for promoting health, preventing human suffering, and reducing societal costs is great. Making the best of this opportunity is our challenge during this decade.

## References

1. U.S. Department of Commerce: Bureau of the Census population estimates and projections: projections of the population of the United States: 1977 to 2050. Series P25, No. 704, July 1977.
2. Chilman, C. S.: Adolescent sexuality in a changing American society. DHEW Publication No. (NIH) 79-1426. U.S. Government Printing Office, Washington, D.C., 1979.
3. Zelnik, M., and Kantner, J. F.: Sexual activity, contraceptive use and pregnancy among metropolitan-area teenagers: 1971-1979. *Fam Plann Perspect* 12: 230-237 (1980).
4. Zelnik, M., and Kantner, J. F.: Sexual and contraceptive experience of young married women in the United States, 1976 and 1971. *Fam Plann Perspect* 9: 55-71 (1977).
5. National Center for Health Statistics: Annual summary of births, deaths, marriages, and divorces: United States, 1980. DHHS Publication No. (PHS) 81-1120. Hyattsville, Md., 1981.
6. U.S. Bureau of the Census: Current population reports: marital status and living arrangements, March 1980. Series P20, No. 365, 1981.
7. Office of the Assistant Secretary for Health and Surgeon General. Healthy people. The Surgeon General's report on health promotion and disease prevention. DHEW Publication No. (PHS) 79-55071. U.S. Government Printing Office, Washington, D.C., 1979, pp. 96-97.
8. Wiesner, P. J.: Magnitude of the problem of sexually transmitted disease in the United States. *In* Sexually transmitted diseases, 1980 status report, NIAID Study Group. DHEW Publication No. (NIH) 81-2213. U.S. Government Printing Office, Washington, D.C., 1981, p. 24.
9. Ingerham, N. R.: The value of penicillin alone in the prevention and treatment of congenital syphilis. *Acta Derm Venereol [Suppl]* (Stockh) 24: 60-88 (1951).
10. Department of Health and Human Services: Sexually transmitted diseases, 1980 status report, NIAID Study Group. DHEW Publication No. (NIH) 81-2213. U.S. Government Printing Office, Washington, D.C., 1981, p. 146.
11. Curran, J. W.: Economic consequences of pelvic inflammatory disease in the United States. *Am J Obstet Gynecol* 138: 848-851 (1980).
12. Centers for Disease Control: Venereal disease morbidity report. CDC 9.688. Statistical Services Section, Atlanta, Ga., undated.
13. Jaffe, H. W.: Infections due to penicillinase-producing *Neisseria gonorrhoeae* in the United States: 1976-1980. *J Infect Dis* 141: 191-197 (1981).
14. Handsfield, H. H., et al.: Epidemiology of penicillinase-producing *Neisseria gonorrhoeae* infections: analysis of auxotyping and serogrouping. *N Engl J Med* 306: 950-954 (1982).
15. Centers for Disease Control: Penicillinase-producing *Neisseria gonorrhoeae* in Los Angeles. *Morbidity Mortal Weekly Rep.* In press.
16. Centers for Disease Control: STD fact sheet. Ed. 35. DHHS Publication No. (CDC) 81-8195. Atlanta, Ga., 1981.
17. Thompson, S.: A prospective study of chlamydia and mycoplasma infections during pregnancy: relation to pregnancy outcome and maternal morbidity. Abstract presented at the Eric K. Fernstrom Symposium III—International Symposium on Human Chlamydial Infection, Lund, Sweden, June 1982.
18. Webster, B.: Professional education and the control of the venereal diseases. *Med Clin North Am* 56: 1101-1104 (1972).
19. Webster, B.: Education and medical students. *J Am Vener Dis Assoc* 1: 61-62 (1974).
20. Stamm, W. E., Kaetz, S., and Holmes, K. K.: Sexually transmitted disease training offered in medical schools and medical residency programs in the U.S.A. *In* Proceedings of the First STD World Congress, San Juan, Puerto Rico, November 1981, p. 47.
21. Department of Health and Human Services: Promoting health/preventing disease: objectives for the nation. U.S. Government Printing Office, Washington, D.C., fall 1980.

## SYNOPSIS

WIESNER, PAUL J. (Venereal Disease Control Division, Centers for Disease Control), and PARRA, WILLIAM C.: *Sexually transmitted diseases: meeting the 1990 objectives—a challenge for the 1980s. Public Health Reports, Vol. 97, September-October 1982, pp. 409-416.*

Sexually transmitted diseases (STDs) represent a major public health problem in the country, cause patients enormous suffering, and cost the nation billions of dollars annually. Demographic, sociological, and behavioral changes in our society

during the past decade are important contributors to the growing complexity and scope of the STD problem.

Several agencies in the Public Health Service are engaged in the Federal effort against STDs. The Centers for Disease Control, as the lead agency, assists State and local health departments in their STD control efforts. In fiscal year 1981, federally supported syphilis and gonorrhea control efforts—based on prevention of an estimated 209,400 new cases—saved the taxpayers approxi-

mately \$150 million.

To meet the 1990 objectives, both the public and private medical sectors must recognize the STD problem of the 1980s. Without the support of the professional community and involvement of the private sector, the incidence of STDs will continue to increase at alarming proportions during this decade. The opportunity for promoting health, preventing human suffering, and reducing costs to society is great. Making the best of this opportunity is our challenge during this decade.